

Evaluation University College Twente
March 2017

UCT evaluation

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Introduction

The University College Twente is unique and innovative, young and fresh and daring. It offers a different take on the Dutch University College concept, by emphasising engineering and an entrepreneurial attitude. Embedded in the middle of its host university, it strives to connect and engage with all five faculties of the UT, and embodies the spirit of High Tech Human Touch. Its honours-level BSc degree programme *Technology and Liberal Arts & Sciences (ATLAS)* integrates science, engineering and social sciences for a diverse group of students with a wide array of interests and ambitions. The “new engineers” it creates have broad perspectives and individually-tailored specialisations, as well as an exceptional skill set, self-awareness, and internal drive.

The decision to start a University College at the University of Twente was taken at the end of 2011. Shortly thereafter, the proposed programme Technology and Liberal Arts & Sciences passed both the *macrodoelmatigheidstoets* and the *toets nieuwe opleiding*, becoming the first and (still) only UC at a University of Technology. An interdisciplinary and flexible curriculum was further developed and realised by a team of creative and open-minded teachers representing a wide scope of UT expertise, stemming from all five faculties. We welcomed the first cohort of students in the Fall of 2013; they have now become the first alumni and ambassadors of UCT.

Coming full cycle brings us to the final evaluation point regarding the decision to create a College at the UT, as agreed upon between the Executive Board and University Council of the UT. The period of evaluation includes four intake moments and one graduation, and affords a sufficient window of time to assess the impact and embedding of the innovative and experimental character of the ATLAS programme within the UT and beyond. The assessment of the educational programme itself is the focus of the upcoming NVAO accreditation review, taking place over the coming two years in cooperation with the eight other University Colleges of the Netherlands. In the meantime, we are proud to be recognized as a Top Opleiding in the Keuzegids for both 2016 (our first appearance in the guide) and 2017.

The present evaluation focuses on the impact and added value of UCT, in evaluating the decision to start a UC at the UT. It is the third (i.e. final) of three evaluation moments, as agreed in 2011. Before completing this evaluation, the Executive Board and University Council discussed the nature and content of the required documentation, to assure and align mutual expectations. This document follows the outline of content as presented to the UC Committee OOS on January 30th, 2017, which was approved during the UC Presidium meeting on February 17th, 2017.

This evaluation document is mostly written in English. Most of the early documentation on the College and the decision-making process in the University Council has been in Dutch. In order to prevent further misreading or confusion we have chosen to leave all references to documents in Dutch in the original language.

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Part 1: Data & information

Data & Information overview: quantitatively

i. Number of students per cohort

2013	2014	2015	2016
29	23	36	50

Over the first three years of the programme, ATLAS had a stable student inflow, with a light increase in 2015. In 2016 the increase was approximately 40%, adding up to **50** incoming students. For an impression of this most recent cohort, see Figure 1.

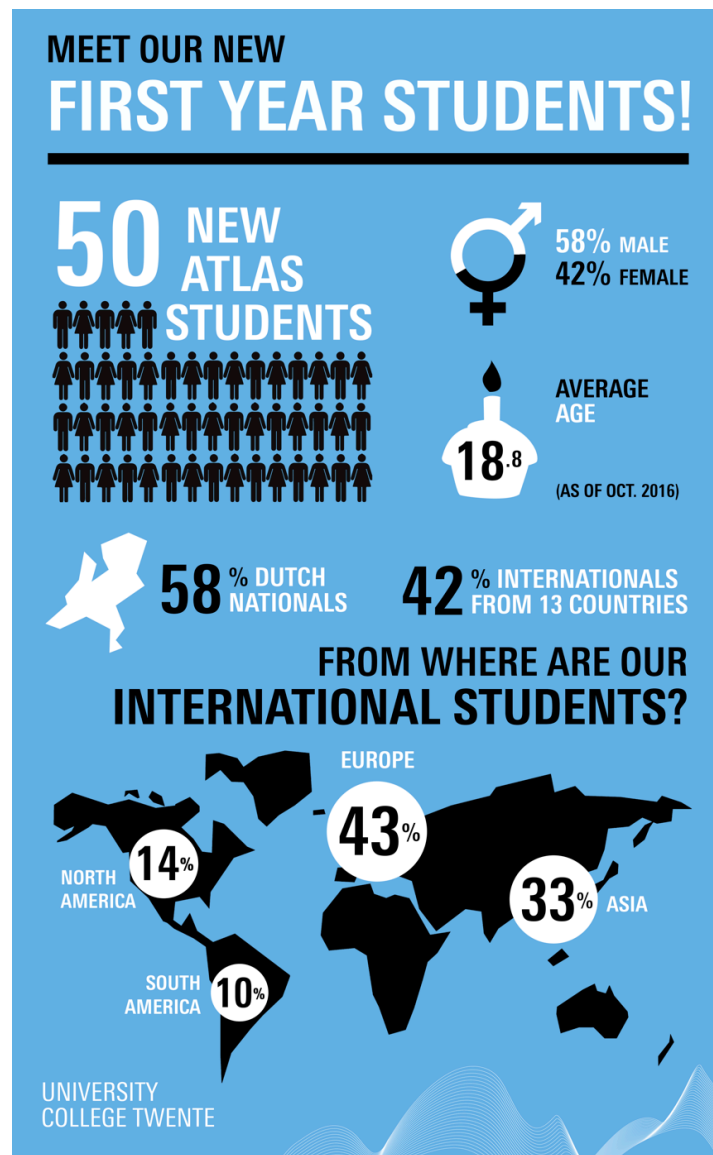


Figure 1: Infographic Class of 2019 by Time Roelofs, ATLAS Class of 2018

Since our start, we attracted an increasing number of students from non-EU countries, resulting in higher percentages of non-EU internationals in relation to the total student inflow: from 7% in 2013 to 21% in 2016, as visible in the table below. The percentage of EU students has been fluctuating between 17% and 26%. Approximately two thirds of incoming students have been Dutch. However, it should be noted that some of these students, while in possession of a Dutch passport, have lived entirely outside the Netherlands before coming to UCT. Our diversity—ethnic, cultural and experiential—is hence greater than the numbers suggest.

The ratio of male to female students has been fluctuating largely between 17:3 and 2:3. Over the whole current community though the ratio is around 2:1. In general UCT certainly attracts more female students than many other engineering programmes do, with the clear exception of the cohort starting in 2015.

Amongst the Dutch University Colleges UCT, stands out for attracting male students. On average the male female ratio in other UCs is 35:65. The Maastricht Science Programme has a 50:50 ratio.

Starting year	2013		2014		2015		2016	
<i>NL</i>	21	72%	14	61%	25	69%	31	61%
<i>EU</i>	6	21%	6	26%	6	17%	9	18%
<i>NON-EU</i>	2	7%	3	13%	5	14%	11	21%
Size of Cohort (initial)	29	100%	23	100%	36	100%	51¹	100%
<i>Male</i>	18	62%	10	43%	31	86%	28	55%
<i>Female</i>	11	38%	13	57%	5	14%	23	45%

ii. Retention and drop-out rates

The dropout rate is based on the number of students who have started ATLAS per year and is cohort specific. For the cohort starting in 2013, this rate was 21%. For the cohorts following, 2014 and 2015 it dropped to 13-17%. Of the cohort that started in 2016, 4% dropped out until now.

Starting year	2013		2014		2015		2016	
<i>Drop-out rate</i>	6	21%	3	13%	6	17%	2	4%
Size of Cohort (initial)	29	100%	23	100%	36	100%	51	100%

¹ One student from cohort 2015 is 'added' to the cohort that started in 2016 (class of 2019) as the student is redoing the year.

iii. Graduation rates: profiles, destinations

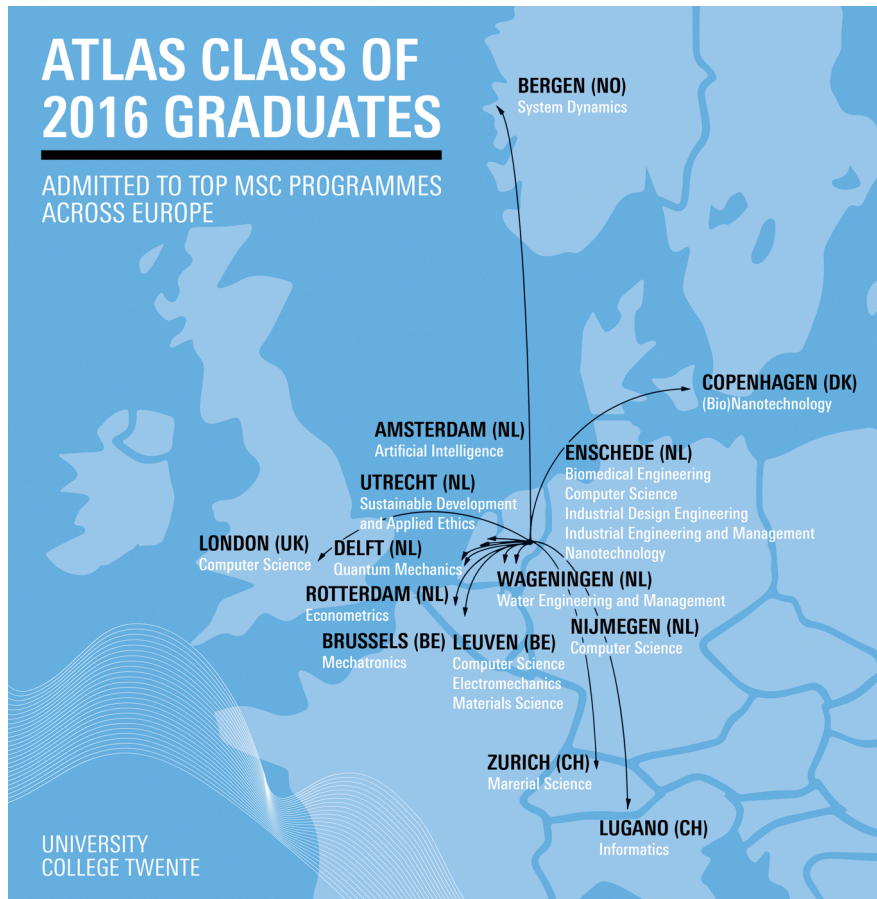


Figure 2: Infographic Graduating Class 2016 by Tim Roelofs, ATLAS Class of 2018

The first cohort graduated in the summer of 2016. 18 students graduated within 3 years, another three took one semester longer. The final two students remaining of the cohort are about to graduate in summer 2017, thus 23 will graduate in total. Hence, 80% of the initially starting students will have graduated within 4 years; considering only those students who re-enrolled in their second year ($n=25$), the graduation rate will be 92%.

The first alumni have been admitted to a multitude of Masters programmes at the UT, the Netherlands, and in Europe in general, including top universities such as the ETH Zurich and Imperial College London; see Figure 2. Their continuing studies span a broad range of disciplines: approximately 3/4 chose for science/engineering programmes, while the rest continue in social science. A few are pursuing internships, board years or other endeavours.

Education & teaching

UCT is an integral part of the University of Twente. Experiences and knowledge are shared from UCT to the UT as well as the other way around. This is true for teaching as well as learning and beyond. Teachers in the ATLAS programme represent all five UT faculties; they bring in their experience and perspective to the design of the curriculum as well as academic advising and teaching. Their experiences in ATLAS they again share with their home faculty. Students learn from ATLAS, and bring the ideas from there to other students in their external courses, as well as to teachers that come in to teach for ATLAS or when being guided by externals.

iv. UT-wide involvement before the start

The start and initial development phase of ATLAS was a true university-wide endeavour. In the period from the decision in 2011 till the start of the programme in September 2013 different groups have together developed the programme and successfully achieved the accreditation.

2011-2012

Programme Council

Name	UT Faculty
Albert van den Berg	EWI
Philip Brey	BMS
Miko Elwenspoek	EWI
Jennifer Herek	TNW
Stefan Kuhlmann	BMS
Ariana Need	BMS
Wessel Wits	CTW
Sophie van Baalen	Student TM
Fenna Janssen	Student IDE

2011-2012

Curriculum Development Group

Name	UT Faculty
André de Boer	CTW
Ruud van Damme	EWI
Maaïke Endedijk	BMS
Jaap Flokstra	TNW
Hannah Westbroek	BMS

2011-2013

Programme management and organisation

Name	Role/contribution
Jennifer Herek	Dean, 0.3 fte
Leonie Krab	Coordinator; admissions, 0.4 fte
Thea Nijhuis	Office manager, 1.0 fte
Kees Ruijter	Programme Director, 1.0 fte

2016

Programme management and organisation

Name	Role/contribution
Laura Bagur	Student affairs, 0.8 fte
Nicoline Dobbe	Student affairs, 0.6 fte
Jennifer Herek	Dean, 0.6 fte
Ans Netjes	Programme Director, 1.0 fte
Anne van der Maat	Study counsellor and Personal Pursuit, 0.6 fte
Leonie Krab	Academic Advising coordinator, 0,8 fte
Jan Schut	Internationalization & Electives, 1.0 fte
Nicole Wright	Student affairs, Admissions, 1.0 fte

v. The ATLAS Core team

From the start curriculum development and teaching in ATLAS have gone hand in hand. ATLAS takes pride in the fact that almost all teachers involved in the Programme Council and Curriculum Development Group have been and still are directly or indirectly involved in ATLAS education, many of them as members of what has been labelled as the ATLAS Core Team. This team consists of a growing group of people from all faculties who develop the different semesters, teach in the programme and serve as academic advisors to students.

The tables below list the Core Team teachers at two points in our development: the start of ATLAS in September 2013 and in September 2016.

Core team teachers September 2013

Teacher	Faculty	Fte
Ardion Beldad	BMS	0,2
Mieke Boon	BMS	0,15
Ruud van Damme	EWI	0,4
Fokko Jan Dijksterhuis	BMS	0,25
Maaïke Endedijk	BMS	0,2
Martin van der Hoef	TNW	0,2
Jasper Homminga	CTW	0,3
Klaasjan Visscher	BMS	0,4
Pascal Wilhelm	BMS	0,2
Wessel Wits	CTW	0,4
		2,7

Core team teachers September 2016

Teacher	Faculty	Fte
Ardion Beldad	BMS	0,2
Mieke Boon	BMS	0,25
Ruud van Damme	EWI	0,5
Fokko Jan Dijksterhuis	BMS	0,4
Martin van der Hoef	TNW	0,4
Jasper Homminga	CTW	0,8
Barend Kobben	ITC	0,2
Jeroen Korterik	TNW	0,2
Ingrid Nota	UCT	0,8
Elze Ufkes	BMS	0,2
Bernard Veldkamp	BMS	0,2
Klaasjan Visscher	BMS	0,4
Wessel Wits	CTW	0,4
Aimee van Wynsberghe	BMS	0,2
		5,15

vi. Bodies in the UCT organisation

In addition to the ATLAS Core Team of teachers, all bodies within in UCT are comprised of people from different faculties.

The UCT Board

To emphasize the interfaculty nature and identity of UCT, the Executive Board of the UT has installed the collective of all UT faculty deans as the Board of UCT.

Name	Faculty
Peter Apers	EWI (host faculty)
Geert Dewulf	CTW
Hans Hilgenkamp	TNW
Tom Veldkamp	ITC
Theo Toonen	BMS

The ATLAS Examination Board

To ATLAS Examination Board was installed with members of the programme council and curriculum development group.

Name	Faculty
Prof Philip Brey (chair)	BMS
Prof Andre de Boer	CTW
Prof Stefan Kuhlmann	TNW
Wessel Wits	CTW

The ATLAS Programme Committee (OLC)

The composition of the ATLAS Programme Committee has changed over the years. The current faculty members are listed below; in addition, three ATLAS students take part. The ATLAS Programme Committee is chaired by an ATLAS student.

Name	Faculty
Martin van der Hoef	TNW
Ingrid Nota	UCT
Klaasjan Visscher	BMS

The ATLAS Curriculum Committee (CC)

As of December 2016 ATLAS the curriculum committee was installed to responsible for curriculum development. The curriculum committee comprises members of both engineering and social sciences

Name	Faculty
Ruud van Damme	UCT
Fokko Jan Dijksterhuis	BMS
Martin van der Hoef	TNW
Jasper Homminga	UCT
Ans Netjes	UCT
Klaasjan Visscher	BMS

vii. [Bringing the UT into UCT](#)

In addition to the UT lecturers involved in teaching and mentoring in the programme, UCT frequently invites inspirational guest speakers from within the UT and beyond. Every semester several experts and speakers are invited to add perspective to the ATLAS semester theme. These lectures allow students to get to know a wide variety of scientists in and around the UT. A non-exhaustive list of people involved in the semesters in the current academic year (2016-2017) is in the table below.

Semester 1	Semester 2	Semester 3	Semester 4
Bertjan van Beijnum	Boelie Elzen	Koray Karaca	Maarten Bonnema
Jeroen Korterik	Annemarije Kooijman	Miles MacLeod	Alexey Voinov
Maarten van Steen	Sascha Kersten	Willem Meurs	Raul Zurita Milla
Mario de Zeeuw	Arjen Hoekstra	Michael Nagenborg	Arjan Hoekstra
	Eugène van Bouwdijk	Ronald Jong	Victor Jetten
	Bastiaanse (Ecovat)	José Kerstholt	Yuri Engelhardt
	Ton Willemsen (Tonzon)	Tatiana Filatova	
	Gijs van Bilsen	Guus Meershoek	
	Anneke Sools	Janneke Alers	
	Maarten Bonnema	Arun Ramakrishnan	
	Tatiana Filatova	Anneke Sools	
		Zaher Mahfouz	
		Arjan Meijerink	
		Matthias de Visser	
		J.J. Stoorvogel	

viii. Educational output

Beyond our most tangible output—our graduates—UCT is making an impact both within and beyond the UT in many ways. This section highlights a few of the accomplishments and accolades of our students and staff.

Innovation in teaching and learning

Working with teachers committed to educational innovation and daring students has allowed us to experiment in developing a radically different educational approach. Students are in the lead of their learning, owning the intended learning outcomes of each semester by developing their own personal development plans. Our assessment is also student-led, in which critical self-reflection and a portfolio of evidence is compiled for holistic and individual evaluation of the knowledge, skills and attitude of each student by the entire teaching team.

The success of this approach will become evident in the success of our students and graduates. We will track and measure the impact of this education through complementary research projects, a few of which have already started (in the research activities of our Core Team teachers (Endedijk, Boon), as well as with external partners (two NRO projects, cooperative study with all UCs). Already, however, our approach is attracting attention from various directions, as seen by a few examples of (invited) contributions:

- TEDx talk: “Reimagining Liberal Education,” Jennifer Herek, Appleton, USA (2013)
- TEDx talk: “Bricolage,” Suhaib Aslam, The Hague (2016)
- Radio programme “Big Beacon”: Jennifer Herek, Wessel Wits, Suhaib Aslam (2016)
- Education conference: “Engineering” Wessel Wits & Leonie Krab (2014)
- Education conference: “Student-led learning,” Maaïke Endedijk, Eindhoven (2015)
- Education conference: “Interdisciplinarity,” Mieke Boon, Amsterdam (2017)
- Education conference: “VLOR Interdisciplinair Ieren,” Ans Netjes, Nick Gregory, Katrina Klösel, Brussels (2016)
- Education conference: “Innovation,” Jennifer Herek, Riyadh (2017)

A general trend for how ATLAS teachers take over experiences to their home faculties is by increasing the interaction with students and decreasing the amount of time used for traditional lectures. Further, they design more open projects and assignment and provide more choice for the students. For the BSc Honours Science track, self-directed learning and academic advising have now been implemented based on the ATLAS example. The aims for transferring ATLAS concepts to other teaching is also visible in the following quotes:

The question I came to ask myself is how we can adapt the taking of an exam more to student’s later life, e.g. by enabling them to use the internet and books – I am still looking for an answer. – Martin, teacher (UT Teacher of the Year, 2016)

*Internally, I started to trust students more to be able to decide what they want to learn and how. And I started asking all my students why they wanted to learn.
– Jasper, teacher*

After my first teaching experiences in ATLAS I switched the classroom – instead of lecture and tutorials, I provided lecture videos and the time with the teacher was used for discussion. – Jasper, teacher

I try to interact with the students as much as possible and also try to cooperate more with other teachers, e.g. co-teaching. In my experience this type of dynamics is well received by the students. – Wessel, teacher

Student accomplishments:

A large percentage of students in ATLAS go beyond the necessary both considering student activism as well as academic pursuits in ATLAS and the wider UT community. ATLAS students and alumni are active in boards and committees of study, sport and culture associations on Campus. Some graduates have even decided to dedicate a year to full time for the UT community, students and staff: Jasper ten Napel as member of the board of the Student Union, Tinka Valentijn on the organization committee for Create Tomorrow, Chris van Kampen as member of the board of sporting association Euros.

Other graduates are engaged in academic activities at and beyond the UT. Jim Hoekstra takes part in the RoboCup Team working to compete at the World Championship for Robot Football 2017. Not only ATLAS graduates engage in technology and design competitions; here are some examples from *first year* ATLAS students: Floor van Donkelaar together with her team won the regional and national competition in the Thales Arduino Challenge. Melanie Droogleever Fortuyn is taking part in Stanford's University Innovation Fellows programme. And a team of five first-year students showcased their semester project at the Dutch Design Week.

Studying abroad

UCT has consciously chosen to design semester 5 as a semester beyond ATLAS. We strongly encourage students to go and explore academic opportunities at other universities, preferably abroad. The figure and tables below depict the Semester 5 destinations of our students for the past and the current academic year. In both years, more than 80% of our students opted for a semester abroad.

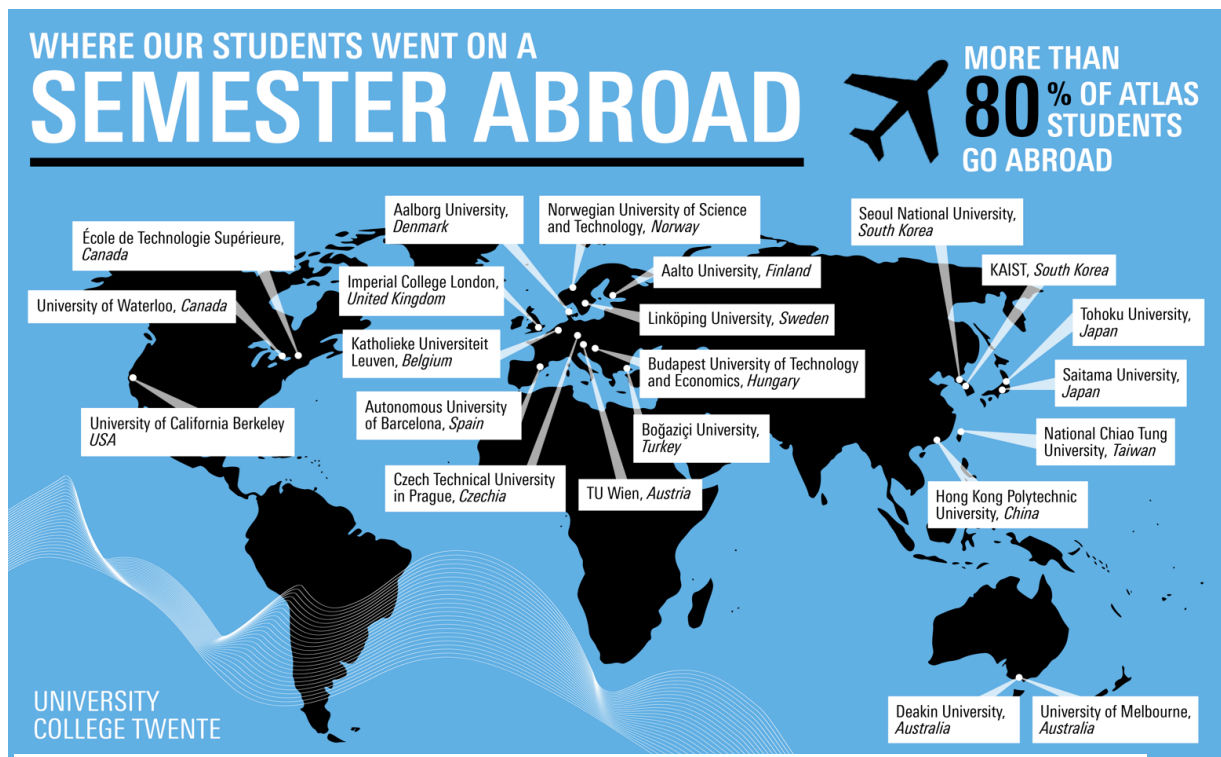


Figure 3: Infographic Semester Abroad by Tim Roelofs, ATLAS Class of 2018

ATLAS Class of 2016 study abroad

	Institution	Country	Exchange program
1	University of Melbourne	Australia	Computer Science/Artificial Intelligence
2	University of Melbourne,	Australia	Electrical Engineering
3	Vienna University of Technology	Austria	Civil Engineering
4	Ecole de Technology Superieure	Canada	Mechanical & Construction Engineering
5	University of Waterloo	Canada	Systems Design Engineering
6	City University of Hong Kong	China	Applied Physics
7	Czech Technical University	Czech Republic	Industrial Design Engineering
8	Aarhus University	Denmark	Nanotechnology/Biomedical Engineering
9	Aalto University	Finland	Computer Science
10	Aalto University	Finland	Maths & Computer Science
11	Tohoku University, JAP-Sendai	Japan	Liberal Arts & Sciences
12	NTNU	Norway	Nanotechnology/Biomedical Engineering
13	NTNU	Norway	Maths/Physics
14	KAIST	South Korea	Computer Science
15	Seoul National University	South Korea	Arts & Design
16	National Chiao Tung University	Taiwan	Mechanical Engineering
17	Imperial College London, UK	United Kingdom	Theoretical/Engineering Physics
18	University of California-Berkeley	USA	Econometrics/Economics
19	Wageningen University	Netherlands	Biotechnology
20	UT	Netherlands	Biomedical Engineering
21	UT	Netherlands	Computer Science/Electrical Engineering
22	UT	Netherlands	Mechanical Engineering/Industrial Design

ATLAS Class of 2017 study abroad

	Institution	Country	Exchange program
1	Deakin University	Australia	Environment and Law
2	University of Melbourne	Australia	Sustainable renewable energy
3	University of Melbourne	Australia	EE, mechatronics
4	KU Leuven	Belgium	OR
5	PolytechnicHongKong	China	Engineering Robotics
6	PolytechnicHongKong	China	Computer engineering
7	Aalborg	Demark	Engineering Robotics
8	BUTE Budapest	Hungary	OR
9	BUTE Budapest	Hungary	EE and Architecture
10	Saitama Japan	Japan	Business in Technology
11	NTNU Trondheim	Norway	environmental, watersystems
12	NTNU Trondheim	Norway	physics, mechanics
13	KAIST Korea	South-Korea	Industrial engineering, maths, business
14	UA Barcelona	Spain	various
15	Linkoping	Sweden	BMT
16	Bogazici Istanbul	Turkey	EE, Computer systems
17	TU Delft	The Netherlands	Aerospace engineering
18	UT	The Netherlands	Biomedical Engineering
19	UT	The Netherlands	BMT

Finances:

At the start of UCT, the multi-annual budget of UCT was based on an optimistic number of incoming students. It was decided that UCT would receive a structural strategic budget of M€ 0,5. For the launch of UCT, budget for marketing, teacher-incentives (recognizing the risk to academic career), and compensation for the delay of funding was made available. Additionally, it was conditioned that only after several years the programme would take part in the UT budget division model. The table below provides the overview of the allocated budget 2012-2017.

ix. Budget 2012-2017

(bedragen in k€)

Begroting UCT/ATLAS 2012-2016	2012	2013	2014	2015	2016	2017
Reguliere Toew. Rijksbekostiging/Collegegelden		195	432	563	653	810
Interne doorberekeningen					48	
<i>Centraal bekostigd strategisch budget</i>						
ATLAS OW-incentive		200	200			
Eenmalige toekenning ondersteuning		300	100	4		
BaMa-vertraging		277	645	856		
Aanvulling exploitatie ATLAS	250	500	500	500	500	500
Totaal strategische budgetten	250	1.277	1.445	1.360	548	500
Totaal inkomsten	250	1.472	1.877	1.923	1.201	1.310
Uitgaven	329	1.436	2.309	2.247	1.924	1.947
Resultaat begroot	-79	36	-432	-324	-723	-637

In 2012-2016 the actual expenditure was much lower than the allocated budget. See table below.

x. Realisation 2012-2016

Jaarrekening	2012	2013	2014	2015	2016
Reguliere Toew. Rijksbekostiging/Collegegelden		37	432	563	654
Diversen (L&P-correctie, HR-comp. etc)		32	74	16	24
<i>Centraal bekostigd strategisch budget</i>					
ATLAS OW-incentive		200	200		
Eenmalige toekenning ondersteuning		300	100		
BaMa-vertraging		277	637	856	
Aanvulling exploitatie ATLAS	258	500	500	500	500
Totaal strategische budgetten	258	1.277	1.437	1.356	500
Totaal inkomsten	258	1.346	1.943	1.935	1.178
Uitgaven	334	774	1.186	1.442	1.639
Resultaat gerealiseerd	-76	572	757	493	-461
<i>Reservestand per 31-12-n</i>	<i>-76</i>	<i>517</i>	<i>1.274</i>	<i>1.767</i>	<i>1.306</i>

The discrepancy between budget and realisation is mainly caused by the initial decision to allocate benefits and resources on the basis of the initial business case of UCT and corresponding student numbers, including the allocation of a central budget to compensate the built-in delay in government funding.

As of 2015, several adjustments (budget cuts) have been made based on the adjusted estimation of the number of incoming students. One of the reasons for the Executive Board to request a new business case in Fall 2015 was the fact that the multi-annual budget of UCT was not transparent nor aligned with realised student numbers enough.

The finances of the new business case (June 2016) are incorporated in the UT-budget 2017–2021 (see separate appendices: Memo EB to UC, October 3rd, 2016 and Business Case UCT, as discussed with the University Council on November 9th, 2016).

xi. Starting points of the new business case in the multi-annual budget

For the new business case the following starting-points have been defined:

(EB decision 20 June 2016; see separate appendices for memo and business case, discussed with UC 9 November 2016)

- A more realistic scenario for the influx of students has been set up (see table below, scenario 1 and 2).
- Realign the cost and budget structure to fit the needs of the ATLAS programme and students and align these with the goals for the University College and the added value of the University College for the UT:

Starting points

- The strategic value of UCT for the profiling of the UT: considering the content (HTHT), the innovative concept and the learning community.
N.B. UCT received the NVAO quality hallmark “small scale and intensive education.”
- The fact that UCT has to organize and finance a major part of its own administration and support, which cannot be delivered by the service departments has to be taken into account

Soon after the start it became clear that UCT—as a residential college—requires a different kind of support for its innovative concept of education than is customary for BSc study programmes at the UT. This is, in part, a direct consequence of the small and intensive education (NVAO quality hallmark). The procedures for selective admission (i.e. a selection procedure and the provision of suitable housing) had to be set up, followed by personalized curricular programming and study progress monitoring (Personal Development Plan, Self-Reflection Report), an exchange semester abroad, and at the end a graduation procedure. It turned out that the support departments were not able to (fully) give the support that was (and still is) needed. Most of the support had to be developed within (and paid by) UCT.

Added value

- UCT played an important role in reaching the UT ambition in the ‘prestatieafspraken’ with ‘OC&W’ (2016) to have almost 6% of students in excellence programmes and will play a significant role in reaching the ambition of having 10% students in excellence programmes.

- The income UCT generates for faculties / research groups: for compensating Core team membership, 'aanschuifonderwijs' and hiring teachers budget has been allocated from M€ 0,6 in 2017 up to M€ 1,0 in 2020 and M€ 1,3 in 2023 and beyond. In that way, all faculties also benefit from the available budget for UCT.
- The opportunity UCT gives to teachers to educate very motivated and talented students and take part in the experimental and innovative 'learning community' of UCT. Also ATLAS teachers' home faculties profit from their experiences.
- The 'aanloop-tekorten' are expected and mostly caused by the delay in government funding (t-2). As of 2025, a balanced budget is expected.

xii. Scenarios for the influx of students and application in the business case:

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
(bedragen in k€)											
Scenario 1 eindinstroom 70 in 2020	<i>instr. per 1-9-n:</i> 45	45	50	60	70	70	70	70	70	70	70
	<i>aantal ingeschr. Studenten:</i> 83	99	115	128	146	165	179	185	186	186	186
Baten	1.089	1.310	1.616	1.741	1.940	2.154	2.333	2.468	2.571	2.635	2.643
Lasten	1.893	1.947	2.092	2.128	2.274	2.443	2.503	2.544	2.593	2.576	2.576
Resultaat bij Scenario 1 eindinstroom 70 in 2020	-804	-637	-475	-387	-334	-289	-171	-76	-22	59	67
-2.637											-3.136 cum.
Scenario 2 eindinstroom 85 in 2020	<i>instr. per 1-9-n:</i> 45	55	65	75	85	85	85	85	85	85	85
	<i>aantal ingeschreven studenten:</i> 83	103	129	155	182	205	219	225	225	225	225
Baten	1.089	1.323	1.672	1.900	2.206	2.496	2.752	2.924	3.031	3.095	3.103
Lasten	1.893	2.003	2.235	2.359	2.553	2.741	2.801	2.842	2.891	2.882	2.882
Resultaat bij Scenario 2 eindinstroom 85 in 2020	-804	-680	-563	-459	-347	-244	-48	82	140	213	222
-2.853											-2.709 cum.

From 2016 to 2024 within scenario 1 a cumulative shortage is estimated van M€ 3,1. This is in line with the business case from 2014, which has been used as the basis for the budgets for 2015-2019 and 2016-2018:

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
(bedragen in k€)											
Begroting 2015-2019	70	80	90	100	100	100	100	100	100	100	100
Baten	1.153	1.578	2.143	2.555	3.019	3.378	3.579	3.579	3.579	3.579	3.579
Lasten	2.376	2.640	2.884	3.162	3.362	3.483	3.536	3.536	3.536	3.536	3.536
Resultaat begroting 2015-2019: eindinstroom 100	-1.223	-1.062	-741	-607	-344	-106	43	43	43	43	43
Resultaat begroting 2016-2018 *	-723	-562	-741								
-2.976											-2.912 cum.

*Resultaat 2016 en 2017 inclusief bezuinigingstaakstelling k€ 500.

An important part of the shortage, namely M€ 2,1 as of 2016 up to 2024, is caused by the delay of the governmental funding: t-2. Every new programme has to deal with this phenomenon. The remainder is caused by the lower number of incoming students in the initial stage (lead-in period). As of 2025, a steady state is expected.

xiii. Transparency in costs and benefits of UCT in multi-annual budget

As of the spring memorandum 2016 – 2021, the UT systematic approach for all programmes has been applied to the ATLAS programme resulting in a clear overview of costs and benefits. The spring memorandum 2016 – 2021 explicitly mentions the resources for UCT: strategic budget of M€ 0,5 and estimated shortages covered by the central reserves.

Benchmarks with other Colleges

i. Overview of different foci of the Dutch University Colleges

The idea of Dutch University Colleges stems from American Liberal Arts Colleges. In University Colleges, living and learning are seen as integral to a person's life, rather than having a study life and an after-study life. Therefore, UCs create learning communities with a specific value set that goes far beyond rules and regulations by law, which is supported by the idea of residential colleges. This high intensity learning experience is possible through the small scale. Alongside with this idea of living and learning the general content taught in University Colleges go beyond usual curricula, communication skills such as presenting and academic writing as well as research skills are seen as crucial for student development.

In addition to UC principles related to the student's learning experience, UCs can also be dynamic environments intended for curricular experimentation and educational innovation, attracting academics dedicated to excellence in teaching.

University College		Starting date	Name of the programme	Profile	Host institution
UC Utrecht	UCU	1997	Liberal Arts and Sciences	LAS (Humanities, Social Sciences, Sciences)	UU
UC Maastricht	UCM	2002	Liberal Arts and Sciences	LAS (Humanities, Social Sciences, Sciences)	UM
UC Roosevelt	UCR	2004	Liberal Arts and Sciences	LAS (Humanities, Social Sciences, Sciences)	UU
Amsterdam UC	AUC	2009	Liberal Arts and Sciences (joint degree)	Big questions	UvA & VU
UC Leiden The Hague	UCL	2010	Liberal Arts and Sciences: Global Challenges	Global Challenges: Human Diversity, World Politics, International Justice or BSc: Global Public Health, Earth Energy & Sustainability, Governance, Economics & Development	UL
Erasmus UC	EUC	2013	Liberal Arts and Sciences	LAS (Economics and Business, Life Sciences, Humanities and Social and Behavioural Sciences)	EUR
UC Twente	UCT	2013	Technology and Liberal Arts & Sciences	LAS with Technology (New Engineer)	UT
UC Groningen	UCG	2014	Liberal Arts and Sciences	LAS (Humanities, Social Sciences, Sciences)	RUG
UC Tilburg	UC Tilburg	2017	Liberal Arts and Sciences	Social Sciences & Humanities	UvT
Comparable Programmes					
Maastricht Science Programme	MSP	2011	Maastricht Science Programme	Natural Sciences	UM
UC Venlo	UCV	2015	Liberal Arts and Sciences (UCV)	Food Nutrition Health	UM
Beta-gamma	Beta-gamma	2003	Beta-gamma	Beta-gamma	UvA

The first University College in the Netherlands was UCU, some others quickly followed. The student intake of these first wave University Colleges quickly increased to around 200 per year. A second wave of University Colleges opening started around 2012. These University College have a slightly different focus, to be discussed below and tend to have smaller student population; UCT is one of them. What connects UCT to the other UCs opened after 2012 is a stronger focus on teamwork and

collaboration in relation to problem solving skills. In addition, UCT distinguishes itself being the only technical UC in the Netherlands and has a unique approach based on self-directed education that is strongly visible not only in an open curriculum but also in assessment and didactics.

In recent years, UCT has become an accepted member of the UC network and cooperates on various levels: Deans, managing directors, directors of education, recruitment, academic advising, and quality assessment and accreditation.

ii. Framework of reference—Liberal Arts & Science programmes

Liberal Arts & Sciences emphasizes intellectual growth through both broad and deep learning as the foundation of the curriculum. In addition, Liberal Arts & Sciences at the Dutch University Colleges goes beyond the traditional liberal arts idea of *liberating* the individual through intellectual engagement. At Dutch University Colleges, Liberal Arts & Sciences stands for a flexible and open curriculum that allows students to explore a diversity of academic fields across the humanities, social sciences, natural and life sciences and enables them to attain depth in a disciplinary or interdisciplinary concentration area of their own choosing. By combining the disciplinary depth and interdisciplinary learning with research and communication skills, students develop their creativity, entrepreneurialism, skills in working together, international and intercultural understanding abilities and societal engagement.

Liberal Arts & Science programmes at Dutch University Colleges have intended learning outcomes that include: (a) multidisciplinary breadth of academic knowledge combined with depth of knowledge in a chosen concentration area; (b) ability to approach questions or issues in an interdisciplinary way; (c) excellent academic skills including communication skills, critical thinking skills, research skills and learning skills; (d) attitudes and skills for active participation as citizens in society, including international and intercultural understanding, social skills and a will to contribute to solving societal issues; (e) intellectual curiosity, reflexivity, and an open mind. These categories of intended outcomes resonate with the domain specific framework of reference for Liberal Arts & Sciences.

At University Colleges, Liberal Arts & Sciences is developed in distinct learning communities and social communities. The formal program and extracurricular activities are linked and students, faculty and staff participate actively in the governance of the program and the community. Teaching and learning experiences are characterized as small scale and intensive, with a high level of interaction between students and teachers and among students. University Colleges strive for diversity in their student population in terms of nationality, ethnicity, gender and cultural and socio-economic backgrounds. Further, they offer dynamic environments that invite curricular experimentation and educational innovation, attracting academics dedicated to excellence in teaching.

Together, all University Colleges are currently preparing for NVAO accreditation, which will take place in the coming 2 years. While we share a common framework of reference, our individual realizations vary considerably, with the UCT recognized as the only “engineering College” with its programme Technology and Liberal Arts & Sciences. In addition to our content, our concept—focused on student-directed learning—sets us apart.

iii. Student intake over the years

The table below depicts the intake of students from 2010-2016 at University Colleges as well as for three additional study programmes that are relevant for comparison to ATLAS. Additionally, for the oldest UCs we have included the size of their first cohort.

UCT is (and will remain) one of the smaller UCs in the Netherlands. The overview shows that the more specialised the profile of a UC, especially when in the exact or natural sciences (Venlo, Maastricht Sciences programme, UCT), the smaller the student population.

Note that while the total number of 1st year students to University Colleges rose by 13% in 2016, the number of applicants to UCT increased by 156%.

UC		Starting date	First cohort	2010	2011	2012	2013	2014	2015	2016
UC Utrecht	UCU	1997	?	109	111	115	128	174	252	237
UC Maastricht	UCM	2002	72	183	188	184	177	220	205	182
UC Roosevelt	UCR	2004	117							
Amsterdam UC	AUC	2009	?	207	186	295	276	293	292	308
UC Leiden The Hague	UCL	2010	110	110	156	126	198	202	196	205
Erasmus UC	EUC	2013	86				86	111	132	185
UC Twente	UCT	2013	29				29	23	36	50
UC Groningen	UCG	2014	58					58	49	87
UC Tilburg	UC Tilburg	2017	64	64	76	95	91	91	82	89
Other programmes										
Maastricht Science Programme	MSP	2011	52		52	68	73	73	91	80
UC Venlo	UCV	2015	19						19	14
Beta-gamma	Beta-gamma	?		181	160	84	145	164	123	123
				854	929	967	1203	1409	1477	1560

Source: 1CijferHO

iv. Number of science majors (BSc graduates)

University Colleges in the Netherlands both offer and require students to choose from a broad range of subjects. Most of the Colleges facilitate that using a major/minor system similar to the US. Students with a major in the natural sciences or quantitative social sciences will receive a Bachelor of Science (BSc) degree upon graduation; students with a major in the humanities or qualitative social sciences receive a Bachelor of Arts (BA) degree.

UCT is the only University College in the Netherlands that offers only a Bachelor of Science degree.

Comparing the number of BSc graduates of other colleges to the size of the UCT allows for a different perspective on the UCT population. Fortunately, two Colleges have published some of these numbers: At UCU, the percentage of BSc graduates in 2012 and 2013 was about a quarter of

the total number of graduates. Hence, roughly 50 students graduated with a BSc degree, which is comparable in size to our cohort starting in 2016 (Class of 2019), currently consisting of 48 students. Also, interesting to note is that the Class of 2015 of AUC—a College that explicitly aims to attract science students—contained only 36% BSc degrees.

UC (Year)	UCU (2012)		UCU (2013)		AUC (2015)		UCT (2016)	
BSc graduates	48	23%	47	25%	83	36%	21	100%
Total graduates	207	100%	191	100%	230	100%	21	100%

v. Costs

Meaningful budgetary insights into the costs of other University Colleges are difficult, if not impossible, to attain. The most important reason for this is that they are not in the public domain. Additionally, direct comparison is not very feasible. Some of the University Colleges (e.g. Roosevelt and Amsterdam and Erasmus) are heavily sponsored by the city or province or other government agency. Amsterdam UC is also a joint initiative from two universities. The educational concept up of Maastricht University (PBL) makes sharing of courses throughout the university very easy. All Colleges except UC Maastricht are residential, and the residential concept can have either a positive or a negative effect on the budget.

In the national cooperation of the University Colleges, and in particular with relation to the upcoming cluster accreditation of all liberal arts programmes, UCT will obtain further insights and compare the financial systems and situations in order to learn from them.

vi. Tuition fees

UCT has—on the basis of the set up and organisation of the teaching and learning and the residential community—received the special NVAO hallmark “small scale and intensive.” This distinction allows UCT to have a selective admission process and to ask for a higher tuition fee.

All UCT students, both EU/EEA and non-EU/EEA pay a higher tuition fee in comparison to all other UT students. Compared to the other University Colleges, the tuition fee of UCT lands in the Top 3 of the highest tuition fees for EU/EEA students, at €4,012. Only Leiden UC The Hague and Amsterdam UC have higher tuition fees. The costs at UC Roosevelt with €3,006 and UC Maastricht with €3,316 are lowest.

University College	EU/EEA Tuition Fee (€)	non EU/EEA Tuition Fee (€)
<i>UC Roosevelt</i>	3,006	8,668
<i>UC Maastricht</i>	3,316	10,000
<i>UC Utrecht</i>	3,950	9,500
<i>Erasmus UC Rotterdam</i>	4,000	11,900
<i>UC Groningen</i>	4,000	12,000
UC Twente	4,012	10,881
<i>Leiden UC The Hague</i>	4,141	12,635
<i>Amsterdam UC</i>	4,251	11,842
Bachelor UT	2,006	7,775/8,875

vii. Housing costs

Most University Colleges, including UCT, are residential and thus require students to live together as part of their educational concept. Yearly housing costs for a private room range from 4,440€ (AUC)

to 7,455€ (LUC The Hague). UCT approximates the housing costs per year to be 5,520 € (average 460€ a month) and is thus in the top range. Additionally, in comparison to the costs of housing for other UT Bachelor students—approximated to be 4,392€ per year—UCT students pay nearly 25% more.

University College	Housing Costs (€)
<i>UC Utrecht</i>	6,200
<i>UC Groningen</i>	5,712
<i>UC Twente</i>	5,520
<i>Erasmus UC Rotterdam</i>	5,500
<i>UC Roosevelt</i>	4,500
<i>Amsterdam UC</i>	4,440
Bachelor UT	4,392
<i>Leiden UC The Hague</i>	4,530 (shared)/7,455 (single)
<i>UC Maastricht</i>	not residential

Part 2: Evaluation

Summary of the decision-making process leading to this evaluation

The decision to start a University College at the UT was taken in December 2011. As an introduction to this evaluation—and to provide the appropriate context—we have compiled an overview of the most important decisions taken over the past years, and provide brief commentary and updates.

Year	Month	
2011	December	University Council confirmation to start a UC at UT; appointment Programme Director (Ruijter)
2012	March	Appointment Dean (Herek)
2012	June	Macro efficiency and accreditation
2012	November	University Council monitoring moment 1
2013	May	University Council monitoring moment 2
2013	September	Start of ATLAS
2014	November	Official rebranding UCT/ATLAS
2014	December	University Council decision to defer monitoring moment 3 from January to November 2016
2015	May	Appointment new Programme Director (Netjes), start phase of more professional/structured organisation
2016	June	1 st graduation
2016	October	University Council monitoring moment 3; new business case provided
2016	November	University Council requests further evaluation data & insights
2017	January	Dean UCT appointed Honours Dean
2017	March	UCT evaluation to University Council

i. Historie besluitvorming UCT – ATLAS

Citaat uit: Aandachtspunten uit de overlegvergadering van 14 en 21 december 2011 van de Universiteitsraad: University College (UR 11 – 280/298)

'De Universiteitsraad,

gezien:

- het instemmingsverzoek University College (UR 11-280);

gehoord:

- de beraadslagingen in de commissie OOS en FPB;

overwegende dat:

- Het University College een middel is voor de profilering van de Universiteit Twente als opleidingsinstituut op het snijvlak van technologie en maatschappij;*
- De voortgang voor de opzet van en belangstelling van potentiële studenten voor deze opleiding invloed moet hebben op de verdere ontwikkeling;*
- Een sterkere focus op het engineering domein gewenst is;*

- De inzet van financiële middelen op de UT door externe bezuinigingen onder druk staan waardoor een blijvende afweging t.a.v. de inzet van middelen noodzakelijk is;
- Naar een positieve interferentie met het huidige honoursprogramma gestreefd moet worden;

Gehoord de toezeggingen van het college dat (21-12-2011):

- 1) Drie tijdstippen voor monitoring van voortgang en heroverweging University College ingebouwd worden. Deze momenten zullen liggen rond zomer 2012, mei 2013 en januari 2016;
- 2) Er een versterkte focus zal zijn op de engineering kant;
- 3) Bij de monitoring in mei 2013 aangegeven zal worden hoe de relatie met honoursprogramma een versterking van zowel het honoursprogramma als het UC gaat opleveren;
- 4) Bij de monitoring in zomer 2012 aangegeven wordt hoe de monitoring van kosten en financiële verantwoordelijkheid wordt gerealiseerd;
- 5) Voor het UC maximaal k€ 500 per jaar financiering boven de financiering van andere opleidingen beschikbaar is;

besluit:

- in te stemmen met de instelling van het University College'.

Antwoorden op de 5 Toezeggingen CvB aan UR 14 december 2011 (zie hierboven) bij evaluatiemomenten 2012 en 2013:

1. De 3 tijdstippen voor monitoring voortgang UCT

De tijdstippen voor monitoring van voortgang en heroverweging University College hebben plaatsgevonden tijdens de overlegvergaderingen van 7 november 2012 en op 19 juni 2013. Verder is in de overlegvergadering van 17 december 2014 bij de bespreking van de begroting 2015, afgesproken het derde evaluatiemoment te verplaatsen naar november 2016. Op 9 november 2016 heeft het CvB een Memo Evaluatie UCT met als bijlage een nieuwe business case voor UCT aangeleverd, echter de UR wenste een aanvullende / onderliggende evaluatie over UCT, waarin expliciet zou worden teruggekomen op de 5 toezeggingen van CvB bij instemming van de UR om UCT te starten, in december 2011.

2. De versterkte focus op engineering

In de eerste rapportage omtrent de monitoring van ATLAS – UCT (d.d. 21 september 2012) is over dit onderwerp het volgende aangegeven:

'Er is toegezegd dat er een versterkte focus zal zijn op de engineering kant. ATLAS spreekt liever van ontwerpen, technologie, probleem oplossen (onder meer het platform Bèta Techniek heeft erop gewezen dat het woord 'engineering' meiden af zou kunnen schrikken, het zou te saai, moeilijk en disciplinair klinken. In ATLAS wordt gesproken over 'new engineering' om de nadruk op de manier van aanpak duidelijk te maken: het ontwerpen van oplossingen waarbij de nadruk ligt op de interactie van het technische en het maatschappelijke perspectief. Door de onderwijsopzet met een thematische opzet met daarbinnen projectonderwijs, met opdrachten die maatschappelijke vraagstukken betreffen, is het risico dat de opleiding een steeds meer science-kleur krijgt, ingedamd.'

COMMENT

Tijdens de overlegvergadering van 7 november 2012 heeft de UR dit antwoord voor kennisgeving aangenomen. Er zijn geen aanvullende vragen gesteld.

3. De relatie met honoursprogramma's

Toegezegd werd dat bij de monitoring in mei 2013 aangegeven zou worden hoe de relatie met honoursprogramma's een versterking van zowel de honoursprogramma's als het UC zou gaan opleveren.

In de tweede rapportage omtrent de monitoring van ATLAS – UCT (d.d. 22 april 2013) is over dit onderwerp het volgende aangegeven:

'Als we de ambities van ATLAS-studenten kennen, zoals deze ook binnen de Personal Pursuit binnen ATLAS tot uitdrukking zullen komen, kunnen we meer zeggen over de richting waarin we tot verdere uitwerking zullen overgaan.'

- *Er is in 2012 gestart met een nieuw honoursprogramma voor 'de tweede O' (Ontwerpen (design)). Ook dit programma staat open voor ATLAS-studenten. Bekeken wordt of en hoe het honoursprogramma design en het ATLAS-programma elkaar wederzijds kunnen versterken.*

- *Excellentietrajecten worden zowel intra-curriculair als extra-curriculair aangeboden. Het voordeel van intra-curriculaire trajecten is dat deze financieel, organisatorisch en inhoudelijk goed beheersbaar zijn. Vanuit dit oogpunt wordt gezien of elementen uit het ATLAS curriculum ook kunnen worden aangeboden in andere bachelorclusters. Voor deze (geselecteerde) studenten creëren we daarmee een verdiepingsaanbod en voor de ATLAS-studenten zou het deels meedraaien in deze andere bachelorclusters een voorsorteringmogelijkheid naar een mogelijke master kunnen inhouden.*
- *Er is veel samenwerking van ATLAS met honours-studenten. Zij spelen een belangrijke rol bij de ATLAS-voorlichting en bij de Skype-interviews. Ook binnen de ATLAS Programme Council denkt een aantal honoursstudenten actief mee en bij de introductie nemen zij het voortouw.'*

COMMENT

Tijdens de overlegvergadering van 19 juni 2013 heeft de UR dit antwoord voor kennisgeving aangenomen. Er zijn geen aanvullende vragen gesteld.

Op 19 september 2016 heeft het CvB besloten om de Dean UCT per 1 januari 2017 te benoemen tot Honours Dean en is onder haar leiding ondertussen een begin gemaakt met het intensiveren van de samenwerking tussen UCT en andere honours/excellence programma's.

4. De monitoring van kosten en financiële verantwoordelijkheid

Bij de monitoring in zomer 2012 aangegeven wordt hoe de monitoring van kosten en financiële verantwoordelijkheid wordt gerealiseerd.

In de eerste rapportage omtrent de monitoring van ATLAS – UCT (d.d. 21 september 2012) is over dit onderwerp het volgende aangegeven:

'In november 2011 werd prof. dr. Ir. Ton Mouthaan benoemd tot penvoerend decaan van ATLAS. Dat betekent dat hij de ATLAS Board of Governors – het ATLAS bestuur, bestaande uit alle UT-decanen -, voorziet en dat ATLAS financieel bij EWI is ondergebracht. De monitoring van de kosten en de financiële verantwoording gebeurt via de jaarplannen bij het najaarsoverleg en de verantwoording bij voorjaarsoverleg, dus via de normale P&C cyclus waarbij ATLAS wordt meegenomen als een aparte eenheid. ATLAS werkt momenteel (september) aan de afronding van de begroting die in het najaarsoverleg aan het CvB wordt voorgelegd.'

COMMENT

Tijdens de overlegvergadering van 7 november 2012 heeft de UR dit antwoord voor kennisgeving aangenomen. Het onderscheid tussen de rol van de decaan en van de dean is besproken in de vergadering en door de rector toegelicht. Hier zijn geen verdere vragen uit voortgekomen.

Tijdens de overlegvergadering van 17 december 2014 heeft de UR n.a.v. de begroting 2015 de volgende overwegingen:

'ATLAS

- *De wijze waarop het college de bekostiging presenteert (structurele bijdrage k€ 500 kwijtschelding overhead bijdrage, kosten boeken op andere budgetten) het zicht op de totale investering ontnemt en in strijd is met consistent begrotingsbeleid.*
- *De UR constateert dat het CvB aangeeft dat een structurele bijdrage van k€ 500 niet voldoende is om ATLAS kostendekkend te laten zijn en het college impliciet aangeeft de streefcijfers uit 2012 niet te kunnen halen op het afgesproken evaluatiemoment van januari 2016.*
- *De UR zorgen heeft geuit over het niet halen van de beoogde studentenaantallen en ook bezorgd is over de mogelijkheid om slechts door veranderde en geïntensiveerde marketing de reeds verlaagde streefcijfers alsnog te halen.*
- *In de structurele situatie een gezonde opleiding neergezet dient te worden binnen de oorspronkelijk afgesproken financiële kaders.'*

Als antwoord hierop heeft het CvB in deze vergadering toegezegd dat: *'De bij het instellingsbesluit afgesproken Evaluatie van ATLAS van januari 2016 verplaatst wordt naar de herfst van 2016 zodat de gegevens van 2 nieuwe instroommomenten in de evaluatie kunnen worden meegenomen, of zoveel eerder als daar aanleiding toe is. Met ingang van de*

Kaderstelling 2016 wordt de voor opleidingen gebruikelijke systematiek ook voor ATLAS toegepast, zodat een helder beeld over kosten en baten ontstaat.'

In de business case van ATLAS zijn in 2016 voor wat betreft de financiën de volgende uitgangspunten gehanteerd:

- *In 2025 en verder wordt rekening gehouden met een sluitende begroting, maar in de jaren daarvoor zal sprake zijn van tekorten die vooral veroorzaakt worden door vertraging in de Rijksbesteding.*
- *In de aanloop naar 2025 wordt gezien in welke mate UCT zal gaan bijdragen aan de centrale overhead, vooralsnog is hiervoor geen ruimte in de exploitatie.*
- *Het uitstellen van de UCT-bijdrage aan de centrale overhead, de aanlooptekorten in de periode tot 2025 en de toekenning aan UCT van het strategische budget van k€ 500 kan afgezet worden tegen:*
 - *het strategische belang van UCT voor de UT: zowel inhoud (HTHT) als didactisch concept, als 'learning community' zijn innovatief en dragen bij aan de profilering van de UT;*
 - *het feit dat UCT in het bijzonder (NVAO kenmerk kleinschalig en intensief) en honours-onderwijs in het algemeen, een beroep doet op een onderwijsondersteuning die in de organisatie nog onvoldoende aanwezig is of voor dit type onderwijs is geregeld. De lasten voor de benodigde directe ondersteuning voor UCT worden dan ook door UCT zelf gedragen;*
 - *het aandeel van ATLAS in het bereiken van de prestatieafspraken met OC&W: UCT is een belangrijk instrument om de ambitie geformuleerd in de prestatie-afspraken op het gebied van excellentie-onderwijs (uiteindelijk 10% excellentie-studenten) te behalen;*
 - *de inkomsten die UCT genereert voor de faculteiten/vakgroepen: voor de compensatie van Core team/coördinatie, aanschuifonderwijs en inhuur van docenten is rekening gehouden met M€ 0,6 in 2017 oplopend tot M€ 1,0 in 2020 en M€ 1,3 in 2023 en verder;*
 - *de mogelijkheid die UCT docenten biedt om geïnspireerd door uiterst gemotiveerde studenten vernieuwend onderwijs te verzorgen en deel uit te maken van de 'learning community' van UCT.*

Bron: MEMO van CvB aan Universiteitsraad, Evaluatie UCT, 3 oktober 2016.

5. Strategische bijdrage k€500 aan UCT.

Voor het UC is maximaal k€ 500 per jaar financiering boven de financiering van andere opleidingen beschikbaar.

In de eerste rapportage omtrent de monitoring van ATLAS – UCT (d.d. 21 september 2012) is over dit onderwerp het volgende aangegeven:

'De ATLAS-begroting gaat uit van jaarlijks maximaal k€500 aan dekking vanuit de UT, zoals besloten. Wel wordt 2014 een moeilijk jaar; er zijn dan nog nauwelijks inkomsten. De kosten gaan voor de baat uit. Er wordt nog onderzocht hoe dat in 2014 opgevangen kan worden. Net als bij andere nieuwe opleidingen is gebeurd is ook voor ATLAS met het CvB overeen gekomen dat de aanloopverliezen door het "t-2"-effect worden voorgefinancierd. Hierdoor bouwt ATLAS aanvankelijk een negatieve bedrijfsreserve op. Na deze aanloopjaren kan ATLAS de exploitatie sluitend krijgen binnen de afgesproken randvoorwaarden (k€500). De grootste onzekerheid wordt bepaald door het aantal toegelaten studenten en hun resultaat.'

COMMENT

Tijdens de overlegvergadering van 7 november 2012 heeft de UR dit antwoord voor kennisgeving aangenomen. Er zijn geen aanvullende vragen gesteld.

Uit de realisatie van de afgelopen jaren wordt duidelijk dat ATLAS haar activiteiten nadrukkelijk heeft aangepast aan de groei in de studentenpopulatie.

Assessing the original goals for UCT/ATLAS both quantitatively & qualitatively

The reasons for starting a University College within the UT have been stipulated in three clear goals related to quality, profile and growth of the university. In the development phase of the College these goals have functioned simultaneously as conditions and signposts, giving directions to the development of the College as a programme and organisation. In this chapter, we will describe and assess these original goals. A SWOT analysis of the state of affairs of UCT in January 2016 is the starting point for a final evaluation and reflection of these goals.

ii. Original goals: why a UC at the UT

The original goals for UCT are described in the document “Voorstel voor de inrichting van een University College aan de Universiteit Twente,” dated 10-10-2011. A translation into English was made for the purpose of this evaluation.

Goals for UCT from 2011 (summarised; translated to English)

<p>1. Quality: UC as a recognized quality seal/label</p> <ul style="list-style-type: none">a. Realizing education for top studentsb. The label/seal will have a positive effect on other all UT programmes; anticipated an increase in level for all programmesc. Catalyst in improving the culture of learning (study climate) allow room for talent and excellenced. (!) Realising an environment that allows for recognition of quality in teaching. Especially important for UT lecturers
<p>2. Profile: Strengthening the profile of the UT</p> <ul style="list-style-type: none">a. Strengthening HTHTb. UT strives for recognizable and renowned education (teaching and learning) profile (comparable to McMaster, Maastricht or Aalborg) a UC makes this profile visible and easy to communicate
<p>3. Growth: UT strives for growth especially of the international student body</p> <ul style="list-style-type: none">a. The UC bachelor programme answers to a societal demand and attracts a new group of students to the UT; a group that has an interest in technology but no interest in technology bachelor programmes as they are currently offered in the Dutch HE landscape.b. A University College will strengthen the international profile of the UT. Attracting more students from Western countries is essential for achieving the overall goals for internationalisation. UCT will be especially attractive for students from Western countries

iii. SWOT analysis, January 2016

As input to the formulation of the new business case for UCT (June 2016), a SWOT analysis was performed in January 2016. Some information has been updated (in italics).

Strengths	Weaknesses
<p>Highly motivated and talented students UCT has been able to attract and select highly motivated and talented students who aim to contribute to solving societal problems combining social and technological perspectives Teachers and guest lecturers are inspired by their attitude, broad interest and academic level. Second and thirds year students often take courses at MSc level.</p>	<p>Gain reputation UCT is young and does not yet have a strong reputation yet. <i>With only one batch of graduates the evidence for the 'output' is limited.</i> Talented and broadly interested (international) students have many other opportunities to choose from.</p>
<p>Learning community UCT is an attractive learning community of students and teachers working together. Teachers are really challenged by students and are able to explore and improve their multidisciplinary thinking and their educational skills. The concept has even more potential when multidisciplinary education and research could be more intertwined (see opportunities)</p>	<p>No academic career paths in teaching yet Teachers are seconded to UCT from other faculties/research groups for 1 or 2 days a week. Teachers often feel stretched between two or three UT stakeholders. Additionally – the UCT programme ATLAS is about teaching & learning. So far UT has no academic career paths in teaching. There is the risk for UCT teachers that their ATLAS work is not valued/recognized and even damaging their career possibilities. This is also a risk for ATLAS (and has proven to be so) for retaining lecturers.</p>
<p>The educational vision The educational concept of UCT is innovative and flexible, based on 3 pillars:</p> <ul style="list-style-type: none"> • Innovation in engineering education • Self-directed learning • Learning community <p>Personal Development Plan, Self-Evaluation Report, no grades. The concept reflects a broader movement (new engineer, David Goldberg) as well as educational innovative ideas about assessment (such as Eric Mazur) UT: In addition the concept reflects and endorses the educational vision of the UT: multidisciplinary (HTHT), student driven, engineering approach, project-based.</p>	<p>Conversion to existing systems/structures The concept is promising but not really proven yet. Several barriers have to be overcome. For example: display international clarity/transparency about the level and background of our students who want to embark on a(n) (international) master programme.</p>
<p>UT ownership All deans are members of the board of ATLAS. UCT can make use of a wide range of academic staff and (research) topics/areas interesting for ATLAS – students to explore. UT ownership could be strengthened by recognition and exploration of the fact UCT offers a learning community, which encourages integration between different academic disciplines (Vision 2020).</p>	<p>Hurdles in embedding UCT in UT UCT does not easily fit into the organizational setting and way of working of the UT. The UT is organised in faculties, research institutes and service departments. All systems and services depart from this. UCT is neither just a programme nor a faculty or other organizational unit. It is difficult to participate in parts of TOM-modules or follow master courses due to the bachelor-before-master rule. Vice versa: It's difficult for other students to actually make use</p>

Strengths	Weaknesses
	of ATLAS courses. The only way now is to follow a whole semester.
<p>UCT reflects Vision 2020 The ATLAS programme perfectly reflects the core values of the UT: ‘making a real difference, excellent in combinations, entrepreneurship and educating tomorrow’s global citizens’. UCT offers a unique degree programme, which supports the development of a more distinctive profile of the UT.</p>	<p>Niche profile The ATLAS-programme really has to demonstrate added value to students, in comparison with other bachelor programmes, which are also multidisciplinary, project-based and internationally oriented (like creative technology and advanced technology). Furthermore, within the ATLAS-programme trajectories/streams are not yet defined for students to prepare for a master programme. Time will help. Because of niche profile it takes more effort and time to convey content and way of learning to prospective students.</p>
<p>University College as quality label UCT can benefit from the reputation of other UCs - when carefully choosing areas and ways of doing so. UC is a quality label: small and intensive. UCT differs from other University Colleges in the Netherlands because of the non-competitiveness, the teamwork, the student-directed learning approach, and the innovative assessment.</p>	<p>Competition with other more established University Colleges and programmes UCT is one of the new University Colleges and has to compete with well-known colleges of Utrecht, Maastricht and Amsterdam. Other competitors are the newer Colleges in Tilburg, Groningen, and Rotterdam. Technology profile, only UC that requires math B, and Physics at a high level. Perceived as less open, with less room for (development in) choice.</p>

Opportunities	Threats
<p>Projects with potential Projects within ATLAS have the potential to become more connected and visible to the outside world involving other organisations (companies, etc.). Stakeholders/partners of semester projects have included Jamie Hyneman, MarsOne, RIVM, Gemeente Hengelo, GGD, ROC. UCT can adopt projects and challenges initiated outside of ATLAS (i.e. DesignLab, 20Creathon, Thales, University Innovation Fellows (Stanford)) Projects within ATLAS can function as new seeds for researchers who would like to start up research in a new interdisciplinary area. (Encourage boundary crossing). Working in multidisciplinary projects can also inspire lecturers to look from different perspectives and as a result come up with new ideas for interdisciplinary research.</p>	<p>Hurdles within UT Hurdles within UT have to do with: -The way research groups are organized. Monodisciplinarity and specialization are dominant drivers for success. -Traditional view on project-led education, projects have to be ‘constructed’ to convey knowledge. Uncertainties in outcome must be limited.</p>
<p>Honours exchange programme Development of Honours exchange semester (HTHT –honours) To enrich the honours portfolio and increase influx of</p>	<p>Organizational setting UT The way the financial model works at UT is not conducive to new initiatives and crossing- border collaboration.</p>

Opportunities	Threats
<p>international students and potential master-students Work closely together with Honours dean / other Honours programmes</p> <p>UCT can be the entity/unit for organizing all honours programmes offered by UT. Efficiency, monitoring quality, visibility, archiving expertise can be drivers.</p>	
<p>Collaboration with DesignLab ATLAS and DesignLab perfectly fit (design as integrating concept across all our academic disciplines Vision 2020)</p>	<p>Direction DesignLab unclear DesignLab is at an early stage of development, management and direction haven't settled yet. Collaboration needs to be initiated and steered (leadership is needed).</p>
<p>Graduates as ambassadors Taking responsibility of their own personal and academic development and being part of a strong supportive learning community have great impact on students, they are formed as young adults at UCT, they are inclined to express that and encourage others by doing so. Graduates will be real ambassadors for UCT, UCT is their alma mater. During their exchange period abroad students already are ambassadors for UCT.</p>	<p>Focus UT on short term results It takes time to establish a network of alumni and profit from it. This goes hand-in-hand with reputation building.</p>
<p>Inspiring learning environment UCT offers an inspiring learning environment where teachers can apply innovative teaching methods in strong collaboration with other teachers and students. UCT can contribute to the development of teachers in other programmes of the UT by offering a working space for experimentation and learning by doing for teachers/researchers who are interested in integrating disciplines.</p>	<p>Coordination of initiatives Different stakeholders are involved in teacher professionalization and teacher career perspectives.</p> <ul style="list-style-type: none"> - 3TU Centre Engineering Education - Human Resources - Centre of Expertise in Learning & Teaching CELT - Initiatives from faculties (EWI: Lund) <p>Who is monitoring these initiatives?</p>
<p>Exploring roles/tasks combining education and research UCT can attract teachers who are interested in exploring multidisciplinary education and research (boundary crossing)</p>	<p>Mono-disciplinary research is leading In academia mono-disciplinary projects / research proposals in many fields are still more valued and accepted for funding Nevertheless, UT has stated the ambition to excel in HTHT research, boundary crossing is a necessity to meet that ambition.</p>
<p>Broadening type and number of activities When the influx of new ATLAS-students would be increased to a steady 70 students a year, it would be possible to offer a more variable core-curriculum within ATLAS (for example informatics and chemistry)</p>	
<p>Trendsetting at a national level UCT fits the strategic political agenda on a national level (ministry of education, culture and science) UCT</p>	<p>Traditional approach NVAO The way of assessing and assessment proof has to be discussed with NVAO. The NVAO accreditation process</p>

Opportunities	Threats
<p>can leverage UT in becoming recognized trend setter in the national debate on educational quality and 'future proof education'</p> <p>Two UCT teachers have given a workshop at the annual congress of Sirius programme (excellence in higher education) about assessment and experienced a lot of support on the innovative way of assessing at UCT.</p> <p>The UCT Dean is a member (<i>co-chair</i>) of the Big Beacon Educational Innovators Working Group, connecting change initiatives for transforming engineering education across the globe.</p>	<p>is inclined to focus on traditional educational concepts/assessments.</p> <p>Another question is whether UCT, having a technology profile, fits into the accreditation cluster of university colleges (just liberal arts & sciences).</p> <p><i>As of December 2016, UCT participates in a cluster of UCs preparing the accreditation. We have a leading role in (re)defining the Domain Specific Framework for all Liberal Arts & Sciences programmes, as well as opportunities to shape the process and distinguish ourselves with our unique concept.</i></p>

iv. Reflection on original goals and implications of SWOT analysis

Goal 1: Quality—UC as a recognized quality seal/label

The first goal of establishing a qualitative outstanding and innovative programme has been reached: UCT succeeded in realizing education for top students, UCT-students have a very positive and motivating effect on teachers and are catalysts in improving the study climate. Graduates are admitted to various master programmes at prestigious universities. UCT has greatly contributed to the '*prestatieafspraken*' with the Ministry of Education about the number of students in excellence programmes.

A positive effect on other UT programmes is difficult to measure, especially quantitatively, though teachers are enthusiastic about how their experience in ATLAS has impacted the education they give in their home faculties. Likewise, the general impression has been positive by the many invited guest lecturers, researchers who serve as experts in projects, teachers who receive ATLAS students in courses in other study programmes, supervisors of graduation projects and personal pursuits and individual studies. Obviously, the attainment of the quality seal of top-rated programme (Keuzegids 2016, 2017) is beneficial to overall assessment of the UT as institution.

ATLAS has succeeded in providing the opportunity for various lecturers to experiment and gain experience in different educational approaches. For example, the UCT system for self-directed learning and assessment is now, with the help of ATLAS students, being transferred to the BSc Honours programme (pilot study, Science track). Another example is how in the fall semester the ATLAS math and physics teachers taught both ATLAS and AT students the same, yet separately. The effect of this was researched and monitored by CELT as part of national NRO research project. Externally, UCT is recognized as an important change initiative in engineering education. Our didactical approach—especially student-directed learning and our assessment methodology—is presented at (inter)national conferences on innovative and interdisciplinary education.

Goal2: Profile—Strengthening the profile of the UT

The second goal and central goal for a UC at the UT was to strengthen the profile of our institution. This goal has been reached in different ways.

The ATLAS degree programme is truly multidisciplinary and combines Technology and Social Sciences. The programme consists of real life projects (project-led education) with

complexity/uncertainty in many different ways. The profile of UCT is unique compared to other UCs and as such really stands out. This is recognized in the different networks UCT participates in. The educational concept reflects Vision 2020, which is about courage, entrepreneurship, being creative and carving out your own pathway to success.

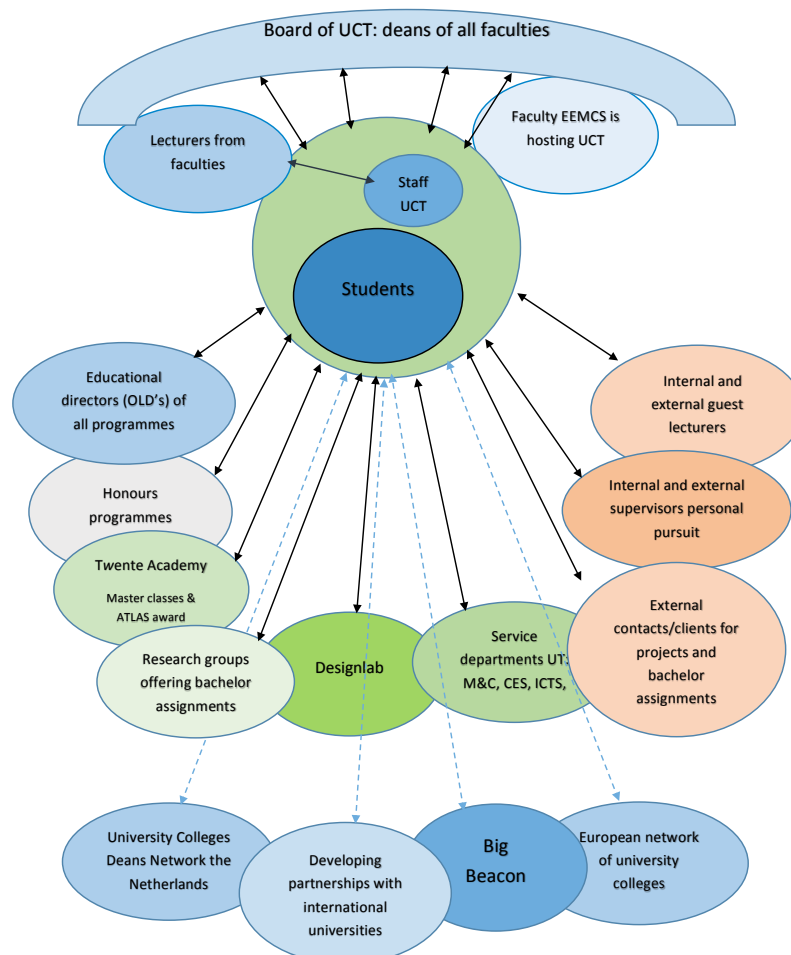


Figure 4: Embedding of UCT in the UT

The synergy between ATLAS (an honours-level degree programme) and the Honours Programmes of the UT is creating an extended community of excellence, bringing ambitious and motivated top students and teachers together. The two study associations—Atlantis and Ockham—are co-localized in the Citadel, facilitating interactions. The Dean of UCT is now also the Dean of Honours, and a common Honours Board consisting of all Faculty Deans provides advice and support for creating innovative educational opportunities for students capable of doing more. These developments are driven by intrinsic motivation as well as external factors, such as the *'prestatieafspraken'* with OCW in which the UT is committed to having 10% of all bachelors' students enrolled in honours education in 2020. The added value of honours education is currently being explored in two NRO-funded research projects. One of these deals with the level and development of creativity and critical thinking in honours students (relative to students who do not participate in these programmes), allowing comparison both within the UT as well as nationally. The second study explores how innovative didactical approaches can be transferred, and is focused on self-directed learning strategies that give students more ownership and responsibility in their education.

Likewise, UCT and the Design Lab are natural partners. The cross-disciplinary nature of the ATLAS curriculum at the interface of technology and social science, as well as the active project-centred approach, is a good match in terms of ideology and facilities. The open and dynamic nature of ATLAS, with emphasis on student-directed and cooperative team-based learning, is physically embodied in the Design Lab space.

Figure 4 depicts the strong embeddedness of UCT in the UT and beyond. This embeddedness strengthens the HTHT profile of the university.

Goal 3: Growth—UT strives for growth especially of the international student body

The third goal of growth of the (international) student body quantitatively has been partly reached. UCT is now welcoming increasingly larger groups of students from different countries and with different backgrounds. Yet, it takes time to build a reputation. In qualitative terms, UCT has had contributed to the international character of the UT student body. The international community in ATLAS has also diffused into the association culture on campus: S.A. Atlantis was the first study association to have a board with more than half of the people not speaking Dutch, changing the language for meetings between study associations to English. Moreover, one of our international students has become the first non-Dutch speaking student in the *Overleg Studieverenigingen*. This increases opportunities at the UT, making it a place where also international students have many possibilities to be active.

The decision taken by the Executive Board in 2014 to rebrand ATLAS—with a stronger emphasis on the University College to recognize the distinct and distinguished nature of the educational setting—has helped a lot. With UCT we relate directly to the other UCs, yet at the same time we distinguish ourselves by the unique engineering profile of the Technology and Liberal Arts & Science programme. This engineering profile fits with the national strategic (OCW) agenda in which multidisciplinary and a solution-oriented approaches in education are stipulated.

Foundations and choices made in the business case

In June 2016, a new business case was formulated for UCT. This business case was based on the SWOT analysis, yet motivated by other reasons. The slower growth of the student population than anticipated in the original proposal of 2011 has had an effect on the development of the curriculum, the use of staff and the finances. The reasons for the slower growth might be as straightforward as they are complex, and are difficult to identify. UCT was the 8th UC in the Netherlands and even though the total number of UC students has increased, this growth is not equally divided over all the content areas. UCT is the first and still the only UC to require students to have a background in mathematics and physics (or another science subject) in order to be admitted to the programme. Growth and development in the other UCs—especially in the Colleges with a distinct profile that leaves out the option to do only social sciences or humanities—is slower.

For all these reasons, it was time to realign the great things happening in UCT with more realistic numbers and budgets in order to ensure the feasibility and sustainability of the College. The aim of the new business was not only to get a quantitatively more realistic business case, but also to reflect on what has been established so far and to explore further opportunities to improve.

v. Outcome of setting up a new business case

The new business case (June 2016) has thus resulted in:

1. Principles to preserve and expand: the three C's:

- Content: Broad and innovative perspective on engineering education (problem solving), integrating Technology and Liberal Arts & sciences with focus on complex societal problems
 - Concept: Student directed learning: Truly putting students in the lead, focus on the personal development of the individual, assessment for learning not for grading
 - Community: Learning community of students & teachers working together, intertwining of doing research and learning, designing new solutions
2. Key variables for shaping further development
- Improve the extent to which education will be integrated, sharing the 3 pillars of UCT
 - Branch out the learning community of UCT to other (honours) programmes
 - Improve the extent UCT is able to encourage boundary crossing between disciplines (HTHT)
 - Strengthen ownership of the UT community
 - Further build a learning community connected to the outside world
 - Develop the means to generate additional funding
3. The (qualitative and quantitative) goals for the College are aligned and renewed

vi. Future perspectives

UCT is working on a realistic and feasible growth. UCT learns from experiences beyond the UT by strengthening the cooperation with other UCs as well as innovative programmes for engineering education around the world. Furthermore, the UCT (Dean and Programme Director) is taking a leading role in the cluster of UCs in preparing for the upcoming accreditation (2019). In that way UCT can encourage innovative thinking of the different stakeholders involved and at the same time safeguard the concept of UCT.

Last but not least: the Dean of UCT and Honours Programmes is taking the lead in creating and encouraging more constructive interference between all Honours/Excellence programmes, in close collaboration with all faculty Deans and also involving the Design Lab.

Appendix

Nieuwe Ingenieurs van de Toekomst

This piece was written by Florianne Verkroost, a student of the first cohort of ATLAS, as a contribution to the 2016 Avond van Wetenschap & Maatschappij. Florianne and Jennifer Herek were invited to serve as table discussion leaders on the topic of innovation in education.

Als we om ons heen kijken, zien we grofweg op alle universiteiten hetzelfde gebeuren. Aan het begin van de semesters zitten de enorme collegezalen nog vol met studenten, maar naarmate het semester vordert haken de meesten al af. Soms wordt er nog weleens netjes gedaan wat de docent opdraagt als het om leeswerk of opdrachten aankomt, mits er natuurlijk bonuspunten voor gegeven worden, maar daar houdt het dan ook wel echt op. Vlak voor het tentamen wordt er hard geblokt om het nodige te onthouden en de studie toch af te kunnen ronden. Studenten wordt verteld wat zij moeten leren en hoe zij dat moeten doen; en ze worden excentriek gemotiveerd door bonuspunten en cijfers. Studenten op deze manier niet opgeleid tot zelfstandige, ontwikkelde studenten die in staat zijn hun eigen pad uit te zetten en succesvol problemen op te lossen die zich hierbij voordoen.

University College Twente biedt iets anders.

1. Breed en interdisciplinair onderwijs. In het eerste jaar volgen alle studenten een breed scala aan vakken, van theoretische natuurkunde tot psychologie. Zo leggen studenten een brede basis aan en kunnen ze tegelijkertijd een beter idee krijgen van wat ze wel en niet leuk vinden, want wie weet in feite nu wat hij of zij leuk vindt op de leeftijd van 18 jaar zonder het allemaal geprobeerd te hebben? Het tweede jaar geeft al meer vrije ruimte voor verdieping of juist verbreding en het derde jaar ligt volledig open om te specificeren met vakken richting de master die de student na de bachelor wil gaan doen. Zelf heb ik ervaren dat een breed onderwijsprogramma ontzettend waardevol is wanneer het aankomt op problemen oplossen, want geen enkel probleem is bijna unidisciplinair. Aan de hand van kennis uit verschillende invalshoeken kunnen oplossingen voor alle partijen tegelijkertijd geoptimaliseerd worden. Daarnaast wist ik na mijn bachelor veel zekerder dat Econometrie was wat ik leuk vond omdat ik het heb uit mogen proberen door vakken te volgen en mijn scriptie in die richting te schrijven. Daardoor heb ik nu een master kunnen kiezen die echt bij mij past en die ik echt leuk vind, terwijl een grote hoeveelheid studenten toch uiteindelijk maar iets lijkt te kiezen dat hen "wel leuk" lijkt.

2. Zelfstandig denken en doelstellingen. Aan het begin van een semester wordt er een document geschreven waarin de korte- en lange termijndoelen worden gesteld en het plan van aanpak wordt beschreven, het zogeheten Personal Development Plan (PDP). Aan de hand van tussentijdige reflecties en opdrachten evalueert de student, samen met de docenten, of de doelen behaald worden of eventueel aangepast worden. Aan het einde van het semester reflecteert de student in zijn Self Evaluation Report (SER) op zijn oorspronkelijke doelen, in welke mate deze wel of niet behaald zijn en wat er in de toekomst beter kan. Voor mij was dit een ontzettend belangrijk punt van de bachelor, want dit heeft mij geleerd om voor mijzelf te denken en te bepalen wat ik graag wil bereiken, in plaats van mij dit te laten vertellen door een docent. In plaats van dat een docent opdraagt wat er geleerd moest worden en hoe, mocht ik zelf besluiten wat ik wilde gaan doen en wat voor mij de beste aanpak zou zijn. Hierdoor heb ik geleerd te leren, en dan bedoel ik niet in de zin van studeren, uit het hoofd leren of reproduceren, maar in de zin van leren hoe je moet leren, hoe je kennisgaten moet overbruggen en wat je moet doen om je doelen te bereiken. Dit heeft mij geïnspireerd een houding van levenslang leren aan te houden: met alles wat ik zal ondernemen in de rest van mijn leven, zal ik proberen mezelf te blijven verbeteren en te blijven leren.

3. Oplossen van problemen op een projectmatige manier. Studenten werken samen aan levensechte projecten en lossen deze op door het probleem van verschillende invalshoeken te benaderen. Zeker wanneer studenten zich meer gaan specialiseren, wordt de toegevoegde waarde hiervan groter, omdat iedereen van een andere markt thuis is. Zo worden er creatieve en originele oplossingen gevonden en leren de studenten meteen de opgedane theoretische kennis toe te passen in de praktijk. Voor mij was dit erg waardevol omdat het mij hielp de stof beter te begrijpen en ook in te zien dat problemen op verschillende manieren benaderd kunnen worden.

Niet alleen heb ik daardoor geleerd om analytisch te denken en in de praktijk te handelen, maar ook heb ik geleerd om samen te werken met een team van medestudenten. Door niet alles alleen te doen en ook met anderen samen te werken, leren studenten wat de effecten van bepaalde teamrollen en gedragsvormen zijn op het werk van een team. Ze leren verantwoordelijkheid te nemen voor zichzelf en voor elkaar en ze leren om te gaan met bepaalde tegenslagen die vaak bij teamwork komen kijken, namelijk mensen die zich niet aan de afspraken houden of communicatieproblemen. In mijn ogen is het van groot belang dat studenten leren om zich in een ander te verplaatsen, om met dit soort problemen om te leren gaan en om zich sociaal op te stellen, omdat dit in het bedrijfsleven later niet anders zal gaan. Het werken in een team heeft mij geleerd dat anderen vaak bepaalde dingen kunnen toevoegen waar ik in mijn eentje niet aan gedacht had en dat ik van anderen een hoop kan leren van vakgebieden waarin ik zelf niet gespecialiseerd ben.

4. Persoonlijke en kleinschalige onderwijs. Wij begonnen met zo'n 25 studenten en 10 docenten, wat natuurlijk een groot voorrecht is. Docenten zijn altijd beschikbaar om even binnen te lopen en ze denken met de studenten mee om te zorgen dat zij het beste uit zichzelf halen. De docenten binnen UCT zijn kritisch, maar ook bereid om samen met studenten te leren. Toen ik eens een vak Tijdreeksanalyse wilde doen en onze wiskundedocent niet precies zo'n vak had klaarliggen, zijn we er samen mee aan de slag gegaan om er samen meer over te leren en eventueel een vak en opdracht te vormen voor studenten die iets soortgelijks wilden doen in de toekomst. Studenten leren niet alleen van docenten, maar ook andersom. Het is dan ook niet vreemd dat een van onze docenten dit jaar de Onderwijsprijs van de UT heeft gewonnen en dat een andere docent door studenten tot docent van het jaar is verkozen.

5. Ontwikkelen van de persoonlijke vaardigheden. University College Twente biedt elk semester de ruimte aan studenten om hun vaardigheden te ontwikkelen op het gebied van Design, Onderzoek, Communicatie, Organisatie, Interdisciplinariteit en Leercapaciteit. Zo leren ze bijvoorbeeld hoe wetenschappelijk onderzoek verricht wordt, wat de eigenschappen van een efficiënte organisatie en goede leider zijn, of hoe ze het beste kunnen leren of kunnen plannen om hun tijd zo nuttig mogelijk te besteden. Daarnaast is er in de zogenaamde Personal Pursuit, ruimte voor studenten om zich persoonlijk te ontwikkelen. Zo heb ik zelf bijvoorbeeld een studievereniging opgericht en voorgezeten, ben ik ambassadeur geweest voor UCT tijdens mijn exchange aan University of California Berkeley in Amerika en ben ik vrijwillig ambassadeur geweest van een wereldwijde non-profit kinderorganisatie. Door deze activiteiten heb ik mij onwijs kunnen ontwikkelen op gebieden als leiderschap, communicatie, organisatie en netwerken. Tevens heb ik me sociaal kunnen ontwikkelen, iets wat voor mij misschien wel het voornaamste doel was met het doen van deze studie. Hierdoor leren studenten zich buiten hun studie te ontwikkelen en leren zij vaardigheden die niet uit een boek of college te leren zijn. Zo wordt iedere student zijn of haar eigen unieke persoon. In plaats van dat alle studenten binnen een studie tot eenzelfde soort student worden opgeleid, is bij UCT iedere student uniek en onderscheidend.

Kortom, University College Twente biedt verbreding in plaats van verdieping; personalisatie van studenten in plaats van generalisatie; zelfstandigheid in plaats van opdragen; en problemen oplossen in plaats van uit het hoofd leren. Dit zijn de nieuwe ingenieurs van de toekomst.

Quotations: the last word

ATLAS is a place of experimental education, where there is no competition but everyone tries to get the best out of themselves. *-Stef, student*

The whole community in ATLAS makes it fun: to learn together and learn from one another. It makes a big difference. *-Katrina, student*

The culture of excellence, doing more, taking it a step further, is not only in the ATLAS programme, but also in the community of students. It is the norm to do extra-curricular things and not only follow the normal programme. *-Egbert, student*

It is not only ok to excel, but we stimulate each other to do so. *-William, student*

ATLAS inspires and empowers teachers. It is an environment where experimentation is possible and even encouraged. *-Frank, teacher*

There are not many other places where it is so normal to be unique. *-Jasper, student*